IUNS 21st ICN
International Congress of Nutrition
“From Sciences to Nutrition Security”

Buenos Aires, Argentina, 15-20 October 2017
Sheraton Buenos Aires Hotel & Convention Center
Conflict of Interest Disclosure

This presentation is supported by ILSI, which is funded primarily by its industry members.
Comparing health indicators across geography: A look at Asia and Latin America

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Background

One ILSI Healthy Aging Project

• Collaboration among International Life Sciences Institute (ILSI) branches in Asia and Latin America
Overall goal: To identify mid-life factors that contribute to healthy vs. pathological aging (Asia & Latin America)
Objective of the presentation

- Provide a background for Asian and Latin American countries in terms of
  - Selected indicators for health and aging that describe the status of the adult population
  - Disease causes of mortality
  - Causes of disability
  - Risk factors for disease & disability (metabolic, lifestyle, dietary, environmental etc.)
Countries included

• High income Asia Pacific
  – Brunei, Japan, Singapore, South Korea

• South & East Asia
  – India, China, Taiwan

• ASEAN countries
  – Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam

Total = 15 countries

• Central Latin America
  – Colombia, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Venezuela

• Andean Latin America
  – Bolivia, Ecuador, Peru

• Tropical Latin America
  – Brazil, Paraguay

• Southern Latin America
  – Argentina, Chile, Uruguay

Total = 17 countries
I. POPULATION AGING INDICATORS
Comparison of Asia & Latin America
Percentage Distribution of Population Aged 65 and Over by Region: 2015 and 2050

2015

- Northern America/Oceania: 9.5%
- Latin America and the Caribbean: 7.6%
- Europe: 21.0%
- Asia: 55.3%

2050

- Northern America/Oceania: 6.6%
- Latin America and the Caribbean: 8.9%
- Europe: 12.6%
- Asia: 62.3%

Source: U.S. Census Bureau, 2013; International Data Base.
Indicator

• Measurement or value that gives an idea of what something (or a situation) is like
Aging indicators

• Median age = The age that divides a population into 2 groups of the same size, such that half of the population is younger than this age, and the other half older

• Percent of population aged 60+ years
Population aging indicators

Average median age (years), 2015

- Latin America: 28 years
- Asia: 32 years

% of population aged 60+ years, 2015 (average)

- Latin America: 11%
- Asia: 13%

Source: Computed from estimates in World Population Ageing 2015
% of population aged 60+ years by region

Latin America
- Central: 10%
- Andean: 10%
- Tropical: 10%
- Southern: 17%

Asia
- ASEAN countries: 9%
- South & East Asia: 14%
- High income Asia Pacific: 19%

Average % of population aged 60+ years
Population aging indicators by region – median age (years)

Latin America

- Andean: 26
- Central: 27
- Tropical: 28
- Southern: 33

Asia

- ASEAN countries: 28
- South & East Asia: 34
- High income Asia Pacific: 39

Average median age (years)
Summary of aging indicators

Asia

- More advanced aging status
  - Median age
  - % of population aged 60 y and above
- High income Asia Pacific countries oldest (Brunei, Japan, Singapore, South Korea)

Latin America

- Younger population than Asia
- Oldest are Southern Latin American countries (Argentina, Chile, Uruguay)
- Youngest are Andean Latin American countries (Bolivia, Ecuador, Peru)
II. WHO HEALTH INDICATORS
Comparison of Asia & Latin America
Indicators for health status

Life expectancy at birth

- The average number of years that a newborn could expect to live if he or she were to pass through life exposed to the sex- and age-specific death rates prevailing at the time of his or her birth, for a specific year, in a given country

Global average in 2015: 71.5 years

Healthy life expectancy at birth (HALE) – indicator of overall health of a population

- the average equivalent number of years of full health that a newborn could expect to live if they were to pass through life subject to age-specific death rates and average age-specific levels of health states for a given period

- Global average in 2015: 63.1 years
HALE and Life Expectancy at Birth in Asia and Latin America, 2015 (years)

**HEALTHY LIFE EXPECTANCY AT BIRTH 2015**

- Males
  - Latin America: 73.5 (average)
  - Asia: 71.6 (average)
- Females
  - Latin America: 78.9 (average)
  - Asia: 77.6 (average)

**LIFE EXPECTANCY AT BIRTH 2015**

- Males
  - Latin America: 65.0 (average)
  - Asia: 63.8 (average)
- Females
  - Latin America: 68.7 (average)
  - Asia: 68.0 (average)

Source: Computed from World Health Statistics 2016
HALE and Life Expectancy at Birth in Asian countries, 2015 (years)

**Healthy Life Expectancy at Birth**

- **ASEAN countries**
  - Males: 60.7
  - Females: 65.3

- **South & East Asia**
  - Males: 63.8
  - Females: 67.5

- **High income Asia Pacific**
  - Males: 70.1
  - Females: 73.8

**Life Expectancy at Birth**

- **ASEAN countries**
  - Males: 68.4
  - Females: 74.7

- **South & East Asia**
  - Males: 71.7
  - Females: 77.3

- **High income Asia Pacific**
  - Males: 78.1
  - Females: 83.5
HALE and Life expectancy at Birth in Latin American countries, 2015 (years)

HEALTHY LIFE EXPECTANCY AT BIRTH

- Southern
  - Males: 66.3
  - Females: 70.9

LIFE EXPECTANCY AT BIRTH

- Southern
  - Males: 74.2
  - Females: 80.8
HALE IN SPECIFIC ASIAN COUNTRIES, 2015

Healthy life expectancy at birth, years

- India
- Laos
- Myanmar
- Cambodia
- Indonesia
- Philippines
- Malaysia
- Thailand
- Vietnam
- Brunei
- China
- Taiwan
- South Korea
- Singapore
- Japan

males

females
Healthy life expectancy at birth, years

<table>
<thead>
<tr>
<th>Country</th>
<th>Males</th>
<th>Females</th>
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<tbody>
<tr>
<td>Chile</td>
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<td>Costa Rica</td>
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<td>Bolivia</td>
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Indicators for health status

Mortality between 30 & 70 years of age from cardiovascular disease, cancer, diabetes, or chronic respiratory diseases

— Unconditional probability of dying between the exact ages of 30 and 70 years from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases
Probability of dying between exact ages 30 and 70 from CVD, cancer, diabetes, or chronic respiratory diseases, Latin America & Asia, 2012

<table>
<thead>
<tr>
<th>Region</th>
<th>Mean probability (%)</th>
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<tbody>
<tr>
<td>Latin America</td>
<td>15</td>
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<tr>
<td>Asia</td>
<td>19</td>
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</tbody>
</table>

Source: Computed from World Health Statistics 2016
Probability of dying between exact ages 30 and 70 from CVD, cancer, diabetes, or chronic respiratory disease, 2012 (by region)

**LATIN AMERICA**

- Tropical: 19.0%
- Southern: 15.5%
- Central: 14.9%
- Andean: 13.8%

**ASIA**

- ASEAN countries: 21.3%
- South & East Asia: 15.2%
- **High income Asia Pacific**: 11.5%

Mean probability (%)
Probability of dying between exact ages 30 and 70 from CVD, cancer, diabetes, or chronic respiratory disease in selected Asian countries, 2012

- Philippines: 27.9%
- India: 26.2%
- Myanmar: 24.3%
- Laos: 24.2%
- Indonesia: 23.1%
- Malaysia: 19.6%
- China: 19.4%
- Cambodia: 17.7%
- Vietnam: 17.4%
- Brunei: 16.8%
- Thailand: 16.2%
- Singapore: 10.5%
- South Korea: 9.3%
- Japan: 9.3%
Probability of dying between exact ages 30 and 70 from CVD, cancer, diabetes, or chronic respiratory disease in Latin American countries, 2012

- Brazil: 19.4%
- Nicaragua: 19.4%
- Paraguay: 18.5%
- Bolivia: 18.3%
- Argentina: 17.5%
- Uruguay: 17.1%
- El Salvador: 16.9%
- Venezuela: 15.7%
- Mexico: 15.7%
- Honduras: 15.7%
- Guatemala: 13.5%
- Panama: 12.5%
- Colombia: 12.4%
- Costa Rica: 12.2%
- Chile: 11.9%
- Ecuador: 11.9%
- Peru: 11.2%

Probability (%)

- Minimum: 11.2%
- Maximum: 19.4%
III. GLOBAL BURDEN OF DISEASE (GBD) 2015 RESULTS
Comparison of Asia & Latin America
Global Burden of Disease Study (GBD)

- Worldwide collaborative effort to measure the impact of health problems on people
- Estimates the burden of premature death and disability in a population caused by more than 300 diseases and injuries in 195 countries
• Data from the 2015 GBD studies were tallied for Asian and Latin American countries
  – Disease causes of mortality
  – Causes of disability
  – Risk factors for disease & disability (metabolic, lifestyle, dietary, environmental)
Disease causes of mortality in selected Asian countries, 2015

Neonatal causes
- neonatal encephalitis: 27%
- neonatal preterm birth complications: 33%
- congenital disorders: 53%

Infectious disease
- HIV: 27%
- TB: 40%
- lower respiratory infection: 87%

NCDs
- Alzheimer's: 20%
- stomach cancer: 20%
- colorectal cancer: 33%
- chronic kidney disease: 40%
- liver cancer: 47%
- diabetes: 53%
- lung cancer: 60%
- ischemic heart disease: 100%
- stroke: 100%

% of countries
Disease causes of mortality in Latin America, 2015

**Neonatal causes**
- Neonatal sepsis: 11.8%
- Neonatal encephalitis: 17.6%
- Neonatal preterm: 64.7%
- Congenital disorders: 82.4%

**Infectious disease**
- Diarrhea: 11.8%
- HIV: 17.6%
- Lower respiratory infection: 76.7%

**NCDs**
- Breast cancer: 5.9%
- Alzheimer's: 5.9%
- Colorectal cancer: 5.9%
- Stomach cancer: 11.8%
- Lung cancer: 17.6%
- COPD: 35.3%
- Diabetes: 58.8%
- Stroke: 82.4%
- Chronic kidney disease: 82.4%
- Ischemic heart disease: 100%

% of countries
Leading causes of disability in selected Asian countries, 2015

**Nutritional causes**
- Other nutritional deficiencies: 7%
- Nematode: 7%
- Iron deficiency: 87%

**Chronic conditions**
- COPD: 7%
- Osteoarthritis: 7%
- Asthma: 53%
- Diabetes: 93%
- Migraine: 100%

**Mental disorders**
- Alzheimer's disease & other...: 7%
- Schizophrenia: 20%
- Anxiety: 80%
- Depression: 100%

**Sense disorders**
- Falls: 20%
- Oral disorders: 20%
- Skin & subcutaneous diseases: 100%
- Sense organ diseases: 100%

**Musculoskeletal disorders**
- Other musk: 93%
- Low back & neck pain: 100%

% of countries
Leading causes of disability in Latin America, 2015

Nutritional causes
- iron deficiency anemia: 88.2%

Chronic conditions
- asthma: 94.1%
- migraine: 100%
- diabetes: 100%

Mental disorders
- anxiety: 100%
- depression: 100%

Sense disorders
- oral disorders: 64.7%
- skin & subcutaneous diseases: 100%
- sense organ diseases: 100%

Musculoskeletal disorders
- other musculoskeletal disorders: 52.9%
- low back & neck pain: 100%

% of countries
Risk factors associated with disability in selected Asian countries, 2015

Environmental
- Air pollution from solid fuels (40%)
- Ambient particulate matter pollution (80%)

Lifestyle
- Smoking (100%)
- Low PA (13%)
- Iron deficiency (7%)
- Diet low in nuts & seeds (7%)
- Suboptimal BF (7%)
- Unsafe water source (13%)
- Diet low in vegetables (13%)
- Childhood undernutrition (33%)
- Alcohol use (47%)
- Diet high in Na (67%)
- Diet low in fruit (73%)
- Diet low in whole grain (100%)

Dietary
- Low glomerular filtration rate (33%)
- High BMI (73%)
- High total cholesterol (87%)
- High fasting plasma glucose (93%)
- High systolic bp (100%)

Metabolic

% of countries
Risk factors associated with disability in Latin America, 2015

Environmental risks
- hh air pollution from solid fuels: 23.5
- ambient particulate matter: 70.6

Lifestyle risks
- low physical activity: 5.9
- unsafe sex: 17.6
- smoking: 82.4

Dietary risks
- unsafe water: 5.9
- diet high in sodium: 11.8
- diet low in whole grains: 29.4
- diet low in fruits: 35.3
- childhood undernutrition: 41.2
- diet low in nuts & seeds: 41.2
- iron deficiency: 52.9
- alcohol use: 100

Metabolic risks
- high fasting plasma glucose: 88.2
- high total cholesterol: 94.1
- low glomerular filtration rate: 100
- high BMI: 100
- high systolic blood pressure: 100

% of countries
### Summary of GBD findings

<table>
<thead>
<tr>
<th>ASIA</th>
<th>LATIN AMERICA</th>
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<tbody>
<tr>
<td><strong>Common causes of mortality</strong></td>
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<tr>
<td>- Ischemic heart disease</td>
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</tr>
<tr>
<td>- Stroke</td>
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</table>
## Summary of GBD findings

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<tr>
<td>▪ Stroke</td>
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<tr>
<td><strong>Common causes of disability</strong></td>
<td><strong>Common causes of disability</strong></td>
</tr>
<tr>
<td>▪ Low back/neck pain</td>
<td>▪ Low back/neck pain</td>
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<tr>
<td>▪ Skin &amp; subcutaneous disease</td>
<td>▪ Skin &amp; subcutaneous diseases</td>
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<tr>
<td>▪ Sense organ diseases</td>
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<tr>
<td>▪ Depression</td>
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<tr>
<td>▪ Anxiety</td>
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<tr>
<td>▪ Migraine</td>
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<tr>
<td>▪ Diabetes</td>
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</tbody>
</table>
### Summary of GBD findings

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Risk factors for disease &amp; disability</strong></td>
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</tr>
<tr>
<td>▪ Smoking</td>
<td>▪ Alcohol use</td>
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<tr>
<td>▪ <strong>High systolic blood pressure</strong></td>
<td>▪ <strong>High systolic blood pressure</strong></td>
</tr>
<tr>
<td>▪ Diet low in whole grains</td>
<td>▪ High body mass index (BMI)</td>
</tr>
<tr>
<td></td>
<td>▪ Low glomerular filtration rate</td>
</tr>
</tbody>
</table>
Comparison of risk factors for Latin America and Asia

**SMOKING**

- **Latin America**: 20.4%
- **Asia**: 24.0%

Current smoking in population age 15+ yrs (% of population), 2010

Source: Computed from WHO Global status report on NCDs 2014
Comparison of risk factors for Latin America and Asia

### Smoking
- **Latin America**: 20.4%
- **Asia**: 24.0%

### Alcohol
- **Latin America**: 7.0 liters
- **Asia**: 5.1 liters

Source: Computed from WHO Global status report on NCDs 2014
Prevalence of current tobacco smoking in population aged 15+ years in selected Asian regions, 2012

- ASEAN countries: 28%
- South & East Asia: 20%
- High income Asia Pacific (Singapore, Brunei): 16%

% of population aged 15+ years
Average per capita consumption of pure alcohol (liters) in population aged 15+ years in Latin American regions, 2012

Per capita consumption of pure alcohol (liters) in population aged 15+ years

- Southern: 9 liters
- Tropical: 9 liters
- Andean: 8 liters
- Central: 6 liters
Prevalence of overweight and obesity in adults aged 18+ years, 2010, Latin America & Asia

- % OVERWEIGHT (average)
  - Latin America: 22
  - Asia: 6

- % OBSESE (average)
  - Latin America: 57
  - Asia: 26

Source: Computed from WHO Global Status Report on NCDs 2014
Combined prevalence of overweight and obesity in adults aged 18+ years in selected Asian countries, 2010

- Myanmar: 20.5%
- Cambodia: 20.8%
- Laos: 22.5%
- India: 23.7%
- Vietnam: 24.2%
- Japan: 27.5%
- Philippines: 28.7%
- Indonesia: 30.2%
- Thailand: 38.2%
- Singapore: 39%
- South Korea: 39.3%
- China: 41.3%
- Malaysia: 51.8%
- Brunei: 65.1%

% OVERWEIGHT & OBESE
Combined prevalence of overweight and obesity in adults aged 18+ years in Latin American countries, 2010

<table>
<thead>
<tr>
<th>Country</th>
<th>% Overweight &amp; Obese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paraguay</td>
<td>64.8</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>66.5</td>
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<tr>
<td>Bolivia</td>
<td>69.2</td>
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<tr>
<td>Honduras</td>
<td>69.7</td>
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<tr>
<td>Guatemala</td>
<td>70.6</td>
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<td>Ecuador</td>
<td>72.8</td>
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<tr>
<td>Brazil</td>
<td>74.1</td>
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<tr>
<td>Colombia</td>
<td>77.5</td>
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<td>El Salvador</td>
<td>78.5</td>
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<td>Peru</td>
<td>79.3</td>
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<td>Costa Rica</td>
<td>84.7</td>
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<td>Venezuela</td>
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<td>Uruguay</td>
<td>88.4</td>
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<td>Panama</td>
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<td>Chile</td>
<td>90.9</td>
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<td>Mexico</td>
<td>92.5</td>
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Conclusions

• Latin America have better health indicators than Asia (higher life expectancy & HALE, lower probability of dying from chronic disease between age 30-70)
• In Asia, high income is associated with better health but not in Latin America.
• Causes of mortality and disability are similar between the 2 regions.
• High blood pressure is a common risk factor for disability, but all other risk factors differ between the 2 regions.
What One ILSI Healthy Aging Project hopes to achieve

- Examine underlying determinants (e.g., dietary, behavioral, environmental, genetic, etc.) of varying risk factors that lead to common disease outcomes in the 2 regions

- Identify/propose country- and region-specific best practices that promote healthy and successful aging.
GRACIAS